

CLAIMS

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. An amplifying circuit, comprising:

a battery power source;

a regulator, configured to regulate an output of the battery power source and to generate a reference voltage;

a signal ground generating device configured to generate and output a signal ground by changing the reference voltage in accordance with deterioration of the battery power source; and

at least one operational amplifier configured to amplify and output a signal having a prescribed waveform, said operational amplifier using the battery power source as a driving power source, wherein the signal ground is positioned at a center of a vibration amplitude of the waveform.

2. The amplifying circuit as claimed in claim 1, wherein said signal ground generating device further comprises:

a control section, configured to output a control signal when

the battery power source deteriorates to a prescribed level;

and

a resistance division circuit, configured to divide the reference voltage at a prescribed rate to obtain a prescribed signal ground in accordance with the control signal.

3. The amplifying circuit as claimed in claim 2, wherein

said control section includes a CPU and a RAM, wherein said RAM stores data of a prescribed deterioration level of the battery power source, and said CPU controls the control section to output the control signal when the battery power source deteriorates to the prescribed deterioration level.

4. The amplifying circuit as claimed in claim 2, wherein said control section includes a plurality of comparators, each configured to compare a voltage of the batter power source with a unique reference voltage; and wherein said resistance division circuit includes a plurality of division resistances being serially connected and having the same number of resistances as a number of the comparators, each of said plurality of resistances being turned on or off in accordance with a comparison result of the plurality of comparators.

5. The amplifying circuit as claimed in claim 1, wherein a speaker is driven by the battery power source.
6. A mobile information terminal, comprising:
- a battery power source;
 - a regulator, configured to regulate an output of the battery power source and to generate a reference voltage;
 - a signal ground generating device configured to generate and output a signal ground by changing the reference voltage in accordance with deterioration of the battery power source;
 - at least one operational amplifier configured to amplify and output a signal having a prescribed waveform, said operational amplifier using the battery power source as a driving power source, wherein the signal ground is positioned at a center of a vibration amplitude of the waveform; and
 - a speaker, driven by the battery power source.